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Reactions of phenolic antioxidants with electrogenerated hexacyanoferrate(III) ions and their use in vegetable oils analysis

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Abstract

Stoichiometric coefficients in reactions of sterically hindered phenols and α-tocopherol with electrogenerated hexacyanoferrate(III) ions have been found. Schemes of oxidation reactions via hydroxyl groups in the molecular structure have been proposed. The relative standard deviation of the results of determination of the indicated compounds in model solutions is ≤5%. It has been shown that α-tocopherol and ionol are quantitatively extracted from vegetable oil by 15-min single extraction at the oil-to-acetonitrile ratio 1: 2.5. A procedure for the extraction-coulometric determination of α-tocopherol in vegetable oil has been developed. © 2013 Pleiades Publishing, Ltd.

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Keywords

α-tocopherol, electrogenerated hexacyanoferrate(III) ions, extraction, food analysis, ionol and its derivatives